Abstract:

Simulated annealing is a probabilistic optimization algorithm which is used for approximating the global extremes of a function at a large state space. We construct a homogeneous Markov chain, whose stationary distribution is dependent on the temperature parameter (this distribution is called the Boltzmann distribution), on this space. With declining the parameter this distribution focuses on the states minimizing the function. The algorithm, on which it can be viewed as a non-homogeneous Markov chain, we use to solve the hard-core model and the graph bisection. We will also deal with the convergence of the algorithm, too rapidly decreasing sequence of the parameters can result in stucking in a local extreme of the function, therefore some requirements on this sequence will be determined.